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889126 PROVISIONAL SPECIFICATION
1 SHEET *This drawing is a reproduction of the Original on a reduced scale*

Fig. 1.

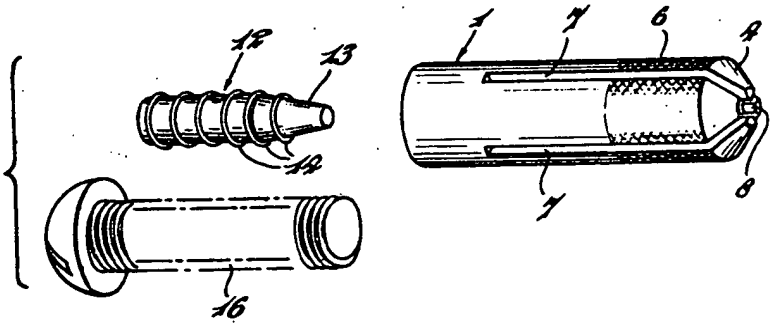


Fig. 2.

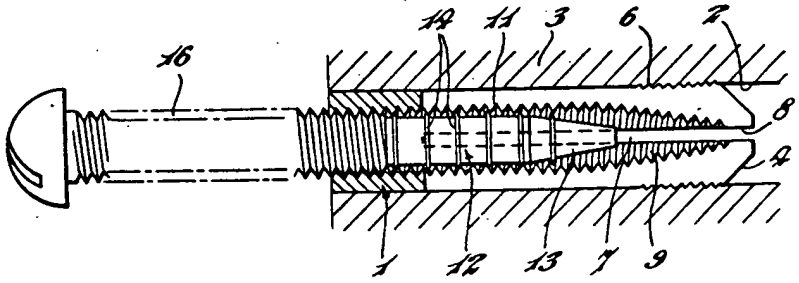
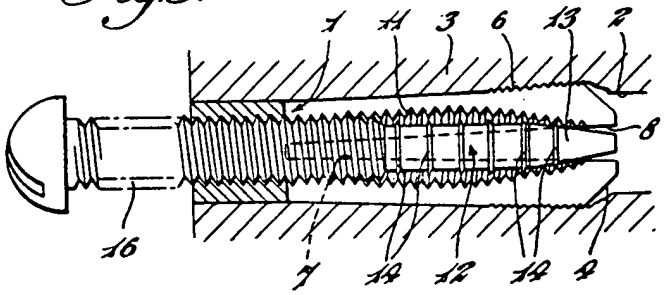


Fig. 3.



PATENT SPECIFICATION

DRAWINGS ATTACHED

Inventor: CECIL ARTHUR TAYLOR

889,126

Date of filing Complete Specification Oct. 5, 1960.

Application Date Oct. 19, 1959.

No. 35303/59.

Complete Specification Published Feb. 7, 1962.

Index at acceptance: —Class 89(1), A6.

International Classification: —F06b.

COMPLETE SPECIFICATION

Improvements in or relating to Anchoring Devices

We, THE RAWLPLUG COMPANY LIMITED, of Rawlplug House, Cromwell Road, London, S.W.7, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement: —

The invention relates to an anchoring device for use in attaching an article to material such as masonry walls having a preformed hole for receiving the device.

According to the invention, the improved anchoring device comprises a resilient sleeve adapted to be inserted in a preformed hole in the material to which the article is to be attached, an expansion member slidable axially within the sleeve and adapted to expand the latter, and co-operating on the expansion member and the sleeve for locking the expansion member to the sleeve in a number of positions through its range of sliding travel.

The co-operating locking means are preferably in the form of one or more projections on the expansion member engageable with an internal screwthread in the sleeve or an internal projection in the sleeve engageable in an external screwthread on the expansion member.

An example of the invention is shown in the drawing accompanying the provisional specification and in which: —

Fig. 1 is an exploded pictorial view of an anchoring device according to the invention and a screw to assist in expanding the sleeve;

Fig. 2 is a sectional side elevation of the same device located in a hole in a wall; and

Fig. 3 is a view similar to Fig. 2 but with the sleeve expanded.

The anchoring device comprises a partially longitudinally slotted resilient brass sleeve 1 which is normally substantially cylindrical as shown in Figs. 1 and 2 and is adapted to be inserted in a complementary hole 2 in the material 3, such as masonry, to which it is desired to attach an article (not shown). A blunt point 4 at one end of the sleeve facilitates its insertion in the hole 2 whilst knurling 6 or another irregular surface formation resist accidental displacement or rotation of the sleeve within the hole.

Near the pointed end of the sleeve 1 and intermediate the length of the slots 7, the axial hole 8 in the sleeve is tapered as shown at 9 in Fig. 2. An internal screwthread 11 for engaging a screw 16 extends along the wall defining the larger diameter portion of the bore 8 and is continued along the tapering surfaces 9 between the slots 7. Alternatively, since the screwthread along the surfaces 9 will usually be formed in a separate operation by a special tap, such thread may be made finer than the thread for co-operating with the screw 16.

12 designates an aluminium expansion member, the tapered tip 13 on which has a taper substantially complementary to the tapered surfaces 9 and which is provided with radial projections in the form of circumferential ribs 14. At least one of the ribs projects from the tip 13. The expansion member is axially slidable within the sleeve and the ribs 14 and screwthread 11 constitute co-operating means for locking the expansion member against unintentional sliding movement as hereinafter described.

After the sleeve 1 has been pushed into the hole 2 to the required extent, the knurling 6 helping to retain the sleeve in this position against unintential displacement or rotation, the expansion member 12 is inserted in the sleeve and pushed forwards, i.e. into the hole, preferably with the aid of the screw 16 engaging the screwthread 11 (Fig. 2). At this stage the expansion member 12 may be a free sliding fit, in that the ribs 14 on the member 12 are clear of the thread 11, or the ribs may

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slightly overlap the apices of the thread 11 as shown in Fig. 2.

When the tip 13 on the member 12 has reached the tapered surfaces 9 in the sleeve, continued turning of the screw 16 causes the sleeve to expand and be forced into the wall bounding the hole 2, as shown in Fig. 3, the member 12 being advanced step by step as at least the foremost rib 14 thereon is forced to snap over axially from one turn of the thread to the next. When the sleeve has been expanded to the desired extent, that is to say when the sleeve is firmly secured within the hole 2, which may be the condition as illustrated in Fig. 3 or a position in which the tip 13 one the member 12 actually projects beyond the end of the sleeve, the screw 16 may be removed.

It will be evident that whenever the screw 16 is partially withdrawn or completely removed, the resilience of the sleeve 1 tends to collapse the sleeve by urging the member 12 away from the tapered surfaces 9 but, according to the invention, the engagement between at least one of the ribs 14 and the thread 11 prevents this from happening. Thus, the expansion member 12 can be safely locked to the sleeve in a number of positions through its range of sliding travel in the sleeve. This brings about the advantage that the hole 2 does not have to be of exactly the same size as the sleeve 1 but can be oversize.

WHAT WE CLAIM IS:—

1. An anchoring device comprising a resilient sleeve adapted to be inserted in a preformed hole in material such as masonry walls to which an article is to be attached, an expansion member slidable axially within the sleeve and adapted to expand the latter, and co-operating means on the expansion member and the sleeve for locking the expansion member to the sleeve in a number of positions through its range of sliding travel.

2. A device according to Claim 1, wherein the co-operating locking means are in the form of one or more projections on the expansion member engageable with an internal screwthread in the sleeve.

3. A device according to Claim 2, wherein the screwthread extends along tapered surfaces provided within the sleeve.

4. A device according to Claim 3, wherein the expansion member includes a tapered tip having a taper which is substantially complementary to the tapered surfaces in the sleeve.

5. A device according to Claim 4, wherein the or at least one of the projections on the expansion member projects radially from its tapered tip.

6. A device according to any one of Claims 2—5, wherein the or each projection on the expansion member is in the form of a circumferential rib.

7. A device according to any preceding claim, wherein the sleeve is partially longitudinally slotted.

8. A device according to any preceding claim, wherein the sleeve has a blunt point at one end to facilitate its insertion in the hole.

9. A device according to any preceding claim, wherein the outside of the sleeve has an irregular surface formation such as knurling to resist unintentional displacement or rotation of the sleeve in the hole.

10. A device according to any one of Claims 3—9, including a second screwthreaded portion in the sleeve for co-operating with a screw which can be used to slide the expansion member axially within the sleeve.

11. A device according to Claim 10, wherein the second screwthreaded portion forms a continuation of the screwthread along the tapered surfaces.

12. A device according to Claim 10, wherein the screwthread along the tapered surfaces has a different pitch than the second screwthreaded portion.

13. An anchoring device substantially as described herein with reference to the drawing accompanying the provisional specification.

For the Applicants:
D. YOUNG & CO.,
Chartered Patent Agents,
9, Staple Inn, London, W.C.1.

PROVISIONAL SPECIFICATION

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According to the invention, the improved anchoring device comprises a resilient sleeve adapted to be inserted in a pre-formed hole in the material to which the article is to be attached, an expansion member slidable axially within the sleeve and adapted to expand the latter, and co-operating means on the expansion member and the sleeve for locking the expansion to the sleeve in a number of positions through its range of sliding travel.

The co-operating locking means are preferably in the form of one or more projections on the expansion engageable in an internal

screw-thread in the sleeve or an internal projection in the sleeve engageable in an external screw-thread on the expansion member.

An example of the invention is shown in the accompanying drawing, in which:—

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12 designates a wedge-shaped aluminium expansion member, the wedge 13 on which has a taper substantially complementary to the tapered surfaces 9 after the sleeve has been expanded as hereinafter described and which is provided with projections in the form of circumferential ribs 14. The expansion member is axially slidable within the sleeve and the ribs 14 and screw-thread 11 constitue co-operating means for locking the expansion member against unintentional sliding movement as hereinafter described.

After the sleeve 1 has been pushed into the hole 2 to the required extent, the knurling 6 retaining the sleeve in this position against unintentional displacement or rotation, the expansion member 12 is inserted in the sleeve and pushed forwards, i.e. into the hole, preferably with the aid of the screw 16 engaging the screw-thread 11 (Fig. 2). At this stage the expansion member 12 may be a free sliding fit, in that the ribs 14 on the member 12 are clear of the thread 11, or the ribs may slightly overlap the apices of the thread 11 as shown in Fig. 2.

When the wedge 13 on the member 12 has reached the tapered surfaces 9 in the sleeve, continued turning of the screw 16 causes the sleeve to expand and be forced into the wall bounding the hole 2, as shown in Fig. 3, the member 12 being advanced step by step at least the foremost rib 14 thereon is forced to snap over axially from one turn of the thread 11 to the next. When the sleeve has been expanded to the desired extent, that is to say when the sleeve is firmly secured within the hole 2, which may be the condition as illustrated in Fig. 3 or a position in which the wedge 13 on the member 12 actually projects beyond the end of the sleeve, the screw 16 may be removed.

It will be evident that whenever the screw 16 is partially withdrawn or completely removed, the resilience of the sleeve 1 tends to collapse the sleeve by urging the member 12 away from the tapered surfaces 9 but, according to the invention, the engagement between at least one of the ribs 14 and the thread 11 prevents this from happening. Thus, the expansion member 12 is safely locked to the sleeve in a number of positions through its range of sliding travel in the sleeve.

D. YOUNG & CO.,
9, Staple Inn, London, W.C.1,
Agents for the Applicants.

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